

Market Barriers to Solar in Michigan and Photovoltaic Valuation

2012 MREP Solar Committee Meeting

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NREL White Papers

- *The Value of Grid-Connected Photovoltaics in Michigan*
- *Market Barriers to Solar in Michigan*



The Value of Grid-Connected Photovoltaics in Michigan

- Value is higher than average due to correlation with peak prices
- Valued at \$0.138/kWh (annual basis)*
- 75% of value is from energy, capacity and environmental attributes*



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The Value of Grid-Connected Photovoltaics in Michigan

- PV Value Components
 - **Energy and Generation**
 - Offset of fuel and O&M from other plants
 - **Capacity**
 - Reduce need to run high cost plants during peak
 - **Transmission and Distribution**
 - Distributed PV reduces infrastructure and losses
 - **Reactive Power Support**
 - Eliminates the need for capacitors to support VAR
 - **Environmental Benefits**
 - **Other**
 - Disaster recovery and other ancillary benefits



The Value of Grid-Connected Photovoltaics in Michigan

- Energy market value above \$0.07/kWh in Summer months and peaks at \$0.093/kWh in August
- December is the only month that average PV market value is less than average market electricity prices
- Overall annual energy market value is \$0.063/kWh



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The Value of Grid-Connected Photovoltaics in Michigan

Conclusion

- Combined Average Value of Solar in Michigan = \$0.138/kWh*
 - Average annual market energy value = \$0.063/kWh
 - Transmission, capacity, VAR support value = \$0.04/kWh
 - Other = \$0.01/kWh
 - Environmental benefit (REC price) = \$0.025/kWh*
 - *Detroit Edison reverse REC auction for vintage RECs = \$0.24/REC or \$0.00024/kWh
 - *Consumers Energy and Detroit Edison estimate REC values at ~\$7/REC or \$0.007/kWh
 - Using above REC values X 3: *\$0.114/kWh - \$0.134/kWh range



Market Barriers to Solar In Michigan

1. Lack of streamlined and consistent permitting between jurisdictions
2. Tax classification inconsistency and lack of residential tax exemption



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Market Barriers to Solar In Michigan

- Permitting requirements can comprise half of the time and cost of solar installations
- Inconsistent permitting between jurisdictions mitigate learning curve reductions and add frustration



Market Barriers to Solar In Michigan

Solutions:

1. Installer provide permitting process information up-front
2. Jurisdictions draft a permitting checklist
3. Online applications and permitting using templates
4. Cap fees
5. Adoption of Solar ABCs Expedited Building Permit Process
 - Led to a 17% decrease in installed PV cost in San Jose, CA
 - Could lead to a 5-13% increase over BAU in installed Solar in Michigan



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Market Barriers to Solar In Michigan

- Inconsistent classification as real or personal property
 - Confuses assessors and system owners
 - Precludes system owners from taking advantage of tax relief (commercial and industrial only under MCL 211.9)
 - Potential residential tax impact of \$0.084/kWh to system owners



Market Barriers to Solar In Michigan

- Solutions
 1. Legislative action
 2. Educational working sessions with assessors
 3. Uniform message from installers and system owners
 - Tax liability offset from exemption would have equated to .00276% in 2008-2009



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- <http://www.michigan.gov/mpsc>
 1. Click on *Renewable Energy*
 2. *Michigan Renewable Energy Program*
 3. *Solar*
 4. *NREL Market Barriers to Solar in MI*



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Market Barriers to Solar in Michigan

2012 MREP Solar Committee Meeting

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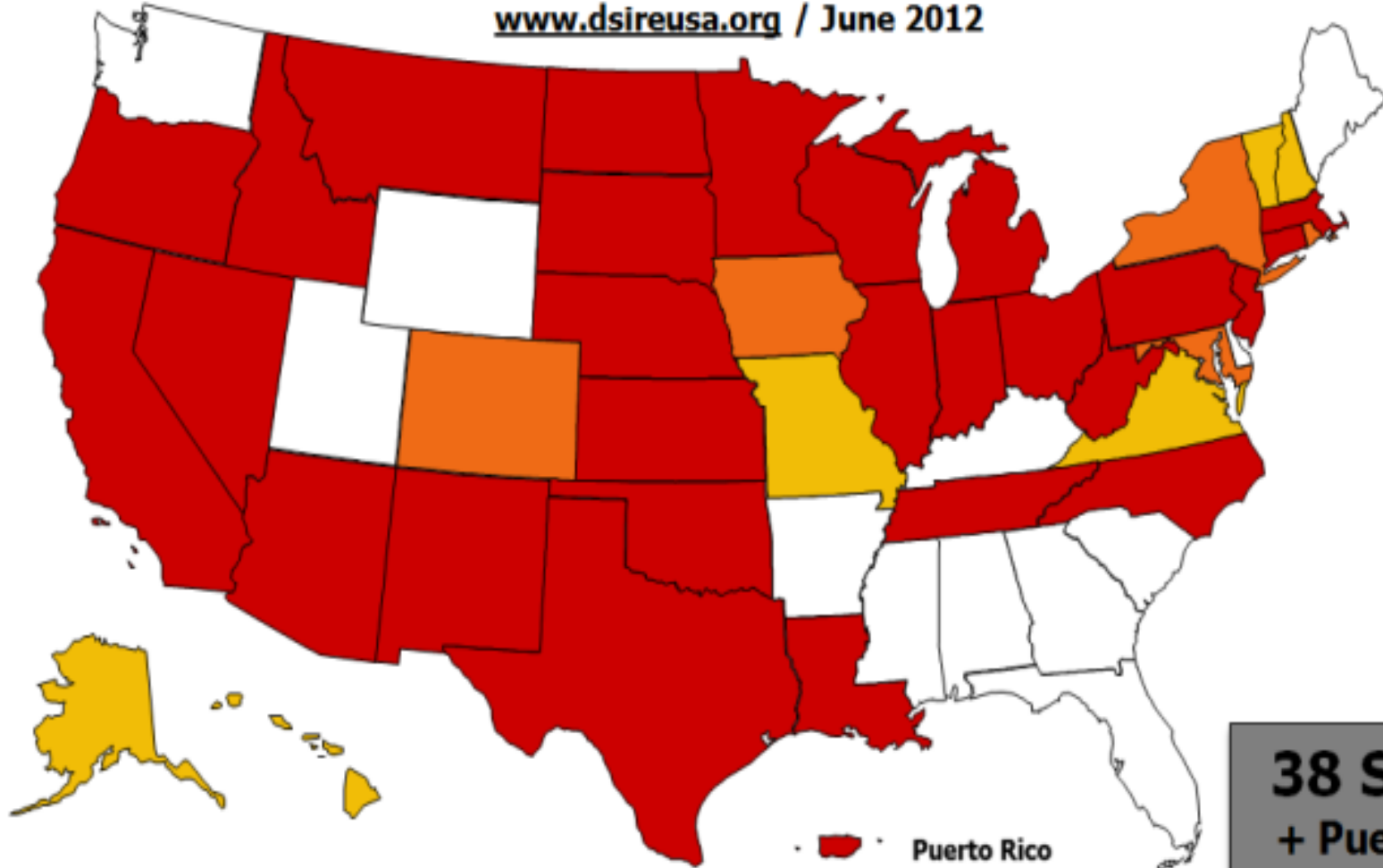
Property Tax Issues

- Different valuation methods
- Differing interpretations around the State
- Differing opinions on personal vs. real



Property Tax Incentives for Renewables

www.dsireusa.org / June 2012



State exemption or special assessment only

Local governments authorized to offer exemption (no state exemption or assessment)

State exemption or special assessment + local government option

Puerto Rico

**38 States
+ Puerto Rico
offer property
tax incentives
for renewables**

Property Tax Incentives for Renewables

Classification Sector



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Property Tax – Available Incentive

2002: Alternative Energy Personal Property Tax Exemption

- Legislative
- Personal Property Exemption
- Commercial and Industrial Sectors



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Property Tax – Classification

- State Tax Commission
 - Real Property
 - Exception: Property located on real property not owned by the owner of the system is personal.



Property Tax – Classification Discrepancy



Personal



Real



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Property Tax – Sector

- Commercial and Industrial Sectors
- Not for Residential



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Property Tax for non-residential

- 100% exemption for those in alternative energy technology business
- 100% exemption for agricultural sector
- Electric providers installing renewable energy continue to pay property tax



Valuation

- The replacement value of the system
- What value the system adds
- Revenue method



Property Tax Legislation

- Amending classification
- Amending definitions



Property Tax – Pending

Property Tax Incentive

- SB 0327 – <http://legislature.mi.gov/doc.aspx?2011-SB-0327> A bill modifying the definitions of photovoltaic and wind energy systems. Sponsor: Schuitmaker.
- SB 0328 – <http://legislature.mi.gov/doc.aspx?2011-SB-0328> A bill to revise property tax exemptions and classifications and restrict the classification of certain real property. Sponsor: Schuitmaker.
- SB 0329 – <http://legislature.mi.gov/doc.aspx?2011-SB-0329> A bill modifying the definition of wind energy system. Sponsor: Schuitmaker.
- SB 0391 – <http://legislature.mi.gov/doc.aspx?2011-SB-0391> A bill to amend wind energy system classification to real property. Sponsor: Green.

Property Tax – Pending

- HB 4104 – <http://legislature.mi.gov/doc.aspx?2011-HB-4104> A series of bills eliminating personal property tax, creating a personal property specific tax and exempting alternative energy systems (some with exceptions and for a limited time) from this new tax. Tie Bar with HB 4102 and HB 4103. Sponsor: Meadows.
- HB 5278 – <http://legislature.mi.gov/doc.aspx?2012-HB-5278> A bill to exempt alternative commercial energy systems from certain property taxes. Tie Bar with HB 5279. Sponsor: Damrow.
- HB 5279 – <http://legislature.mi.gov/doc.aspx?2012-HB-5279> A bill to exempt commercial energy systems from certain property taxes and to create an alternative commercial energy specific tax. Tie Bar with HB 5278. Sponsor: Damrow.
- HB 5510 – <http://legislature.mi.gov/doc.aspx?2012-HB-5510> A bill to exempt certain small-scale (no greater than 150kw) solar and wind energy conversion devices from taxes under the general property tax act. Sponsor: Glardon.

- <http://www.michigan.gov/mpsc>
 1. Click on *Renewable Energy*
 2. Synopsis of MI Renewable Energy Legislation



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National Renewable Energy Laboratory
White Paper: Market Barriers to Solar in Michigan



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